Testimony by

DUANE SMITH
Executive Director, Oklahoma Water Resources Board

On Behalf of
WESTERN GOVERNORS' ASSOCIATION
WESTERN STATES WATER COUNCIL

H.R. 5136, The National Integrated Drought Information System Act of 2006 (NIDIS)

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Mr. Chairman and members of the Committee, thank you for the opportunity to appear before you today to discuss an issue of great importance to Western states—drought monitoring and forecasting. My name is Duane Smith. I am the Executive Director of the Oklahoma Water Resources Board. I am testifying today on behalf of the Western Governors' Association, as well as the Western States Water Council. I currently serve as Vice Chair of the Western States Water Council.

The Western Governors' Association is an independent, nonprofit organization representing the governors of 19 states, American Samoa, Guam and the Northern Mariana Islands. Through their Association, the Western governors identify and address key policy and governance issues in natural resources, the environment, human services, economic development, international relations and public management.

The Western States Water Council is a "sister" organization to WGA consisting of representatives appointed by the governors of 18 western states (does not include Hawaii). The purposes of the Council are: (1) to accomplish effective cooperation among western states in the conservation, development and management of water resources; (2) to maintain vital state prerogatives, while identifying ways to accommodate legitimate federal interests; (3) to provide a forum for the exchange of views, perspectives, and experiences among member states; and (4) to provide analysis of federal and state developments in order to assist member states in evaluating impacts of federal laws and programs and the effectiveness of state laws and policies.

Please describe the impact of drought on states' ability to manage water resources.

Drought is a complex and widespread natural hazard, affecting more people in the United States than any other natural hazard, including hurricanes, floods, and tornadoes, and accumulating annual estimated losses between $6 and $8 billion. The magnitude and complexity of drought hazards have increased with growing population, population shifts to drier climates, urbanization, and changes in land and water use.

Drought is a normal part of the climate for virtually all regions of the United States, but it is of particular concern in the West, where any interruption of the region's already limited water supplies over extended periods of time can produce devastating impacts. Records indicate that drought occurs somewhere in the West almost every year. However, it is multi-year drought events that are of the greatest concern to the economic and ecological health of Western states.

Water scarcity continually defines and redefines the West. The steady growth that has been characteristic for much of the West today creates increased demands for agricultural, municipal and industrial water supplies. Population growth is continuing at an unprecedented rate in the West with ramifications not only for cities but rural communities and agricultural valleys. According to the 2000 Census Bureau statistics, population growth varied significantly by region in the 1990s, with the highest rates in the West (19.7 percent). The West increased by 10.4 million to reach 63.2 million people. While water resources are available for growth in the aggregate, they are virtually entirely "appropriated" under regimes that have vested private property rights in water right holders.

As municipal and industrial water use increase relative to older agricultural uses, the demand becomes more inelastic. A farmer can forgo a crop year when water supplies are tight; a municipal water system cannot cut back or shut down without serious consequences to the community served.

Water demands are growing not only for traditional uses, but for non-traditional uses associated with so-called instream values for water quality, recreation, wildlife habitat and aesthetic purposes. Water for increasing energy needs is expected to exacerbate demands on available supplies. Unquantified Indian water right claims represent further demands on water bodies throughout the West. Such competing demands as the public's rising concern for meeting "quality of life" and environmental objectives create water supply management challenges in times of normal precipitation. Drought exacerbates these challenges.

Although drought visits some part of the country every year and causes billions of dollars in impacts, there does not exist a permanent national policy to prepare for and respond to drought disasters. At the federal level, droughts have historically been treated as unique, separate events—even though they are always a part of the natural variation of nature—and frequent, significant droughts of national consequences are inevitable in the years ahead. Actions are taken mainly through special legislation and ad hoc measures rather than through a systematic and permanent process, as occurs with other natural disasters. Frequently, federal funding to assist states has been unavailable, or not available in a timely manner.

What are the major strengths and weaknesses of drought monitoring and forecasting information currently provided by the National Oceanic and Atmospheric Administration and other federal agencies? How do states use this information to inform water resource management decisions?

Drought planning and mitigation by state water management agencies and water managers depend upon the gathering of high quality information related to a variety of physical, environmental and human conditions. Characterization of drought requires a combination of two types of information:

1. Observations of past and current physical states of the environment and their context within the relevant historical record.
2. Documented impacts on human and natural systems that are a consequence of the physical conditions.

It requires a network of scientists to maintain the physical observing system, collect and analyze the data, and collect and synthesize the information on drought impacts. These observations must meet data quality standards for siting, performance and maintenance.

The physical information needed by states and water managers includes observations of precipitation, soil moisture, snow water content and snow depth, soil and air temperatures, humidity, wind speed and direction, and solar radiation. Currently, the placement of soil temperature and soil moisture measurements is too sparse, and nonexistent in many areas, for effective use. The greatest current data shortfalls are on the local (city/county) and state levels. Physical information and drought impact information at these levels is almost impossible to obtain in a uniform manner across the nation. Drought information needs also differ greatly by region. In the West, for example, mountain snow pack is a critical component of water supply. It is thus essential to generate and distribute the best estimates possible of the water content of snow on the ground, snowmelt, and snow-to-vapor sublimation.

Current efforts at drought management depend upon data that are scattered throughout numerous federal, state, regional and local agencies. The Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) manages snow pack information, the Army Corps of Engineers (COE) and Bureau of Reclamation (BOR) manage reservoir storage data, NOAA manages hydroclimatic data, Interior's Geological Survey (USGS) has ground water and stream flow information, and the Environmental Protection Agency (EPA) manages various water quality programs in concert with the states and tribes. Regional and state entities also provide considerable data and information services used for drought analysis in real time. These programs have generally evolved independently, require separate appropriations and, until recently, have not been available to users at a central location due to their complexity and the absence of tools to accomplish data integration.

The information produced by federal and nonfederal partners that is critical to drought monitoring and prediction poses a problem for many users. The information is often technical, complex and typically is not presented in a standardized format. Many potential users do not even know some drought resources exist.

Weather and climate observations have limited value if they cannot become part of a larger drought risk mosaic. A wide variety of data networks currently exist throughout the U.S. Many of these networks transmit their observations with telecommunications

that balance frequency and reliability with operation and maintenance costs. A large number of hydroclimatic observations, including the USGS streamflow network, are transmitted in near real-time by satellites (GOES). In the mountainous West, where data transmissions are often blocked by mountains, the meteor-burst technology used by the NRCS SNOTEL (SNOw TELemetry) network provides a reliable and cost-effective real-time data transmission method. In areas where terrain is not a constraint to data transmission, innovative partnerships have been established to "piggy-back" climate data over existing data networks. In Oklahoma, the Oklahoma Climatological Survey (OCS) has a partnership with the Oklahoma Law Enforcement Telecommunications System (OLETS) allowing the transmission of its Mesonet data through police, fire and emergency management offices throughout the state.

How would the proposed National Integrated Drought Information System (NIDIS) improve the quality and usefulness of the drought monitoring and forecasting information provided by the federal government?

NIDIS will bring together a variety of observations, analysis techniques and forecasting methods in an integrated system that will support drought assessment and decision-making at the lowest geopolitical level possible. The tools will allow users to access, transform and display basic data and forecasts across a range of spatial and temporal scales most suited to their individual needs.

NIDIS will provide drought information through the Internet in an interactive environment. The Internet will allow quick, convenient, frequent, and low-cost assessments of drought risk by users. Access to immediate drought information will be of continuing benefit, since drought impacts vary by time of year. On-demand risk analysis will provide the lead time needed to implement appropriate economic strategies to reduce drought impacts. Many people are aware of the need for water conservation and other measures during drought. But once drought is over, old habits tend to dominate. The benefits of sustained public awareness will be realized through NIDIS.

No systematic collection and analysis of social, environmental and economic data focused on the impacts of drought within the United States exists today. Examples of data that could be collected include drought-related relief payments; mental health visits in drought-stricken areas; losses of revenue due to low water, ranging from river rafting guide revenues to barge tonnage; reduced hydropower production; increased ground water pumping costs for agriculture and municipal purposes; revenues from fish camp and canoe outposts; golf course revenue; agricultural yield losses not eligible for relief payments (e.g., nurseries); skier days and snow-related tourism revenue; and ecological impacts data such as water quality, and impacts from wildland fires; etc. Because such data either are not centralized or not collected, officials often underestimate economic and social costs related to drought.

NIDIS will fill that gap by developing methodologies to collect and assess the social, environmental and economic impacts of drought across the United States. These methodologies will also develop assessments from sectors not always at the forefront,

such as the livestock, timber, wildlife, energy, recreation and tourism sectors. Understanding these impacts of drought will empower users and expand the comprehension of the full magnitude of drought losses. By so doing, it will encourage local, state and federal officials to increase efforts in drought planning, preparation, and mitigation. Comprehensive baseline data on drought impacts also will help to verify the relative cost effectiveness of "risk" versus "crisis-management" approaches to drought management.

Drought-related research is critical in the production of innovations and technology that lead to improved drought preparedness. Currently a coordinated and integrated drought research program does not exist at the national level, despite the enormous impact of droughts every year on the nation's economy, society and the environment. Currently, drought research is scattered across many agencies, universities, and other research institutions, without formal coordination or planning to maximize the value of the research dollars spent and without effort to ensure that the priority needs of the public and decision-makers are being addressed. The simple act of coordinating drought research within and between levels of government, as well as with private entities and universities, will help accelerate the development and provision of scientifically-based information products, thereby, enabling users to better prepare for, manage and respond to the impacts of drought.

Please provide specific comments on H.R. 5136, the National Integrated Drought Information System Act of 2006.

On June 21, 2004, the Western Governors unanimously adopted a report developed in partnership with the National Oceanic and Atmospheric Administration (NOAA) entitled, *Creating a Drought Early Warning System for the 21st Century: The National Integrated Drought Information System (NIDIS)*. In the report, the Governors conclude that "Recognition of droughts in a timely manner is dependent on our ability to monitor and forecast the diverse physical indicators of drought, as well as relevant economic, social and environmental impacts." The report describes the vision for NIDIS and offers recommendations for its implementation. It is available online at www.westgov.org.

The National Integrated Drought Information System (NIDIS) authorized by H.R. 5136 would coordinate and integrate a variety of observations, analysis techniques and forecasting methods in a system that will support drought assessment and decision-making at the lowest geopolitical level possible. NIDIS will provide water users across the board—farmers, ranchers, utilities, tribes, land managers, business owners, recreationalists, wildlife managers, and decision-makers at all levels of government—with the ability to assess their drought risk in real time and before the onset of drought, in order to make informed decisions that may mitigate a drought's impacts.

The Western Governors' Association and Western States Water Council support the National Integrated Drought Information System Act of 2006, and urge its enactment. The Western states believe that enactment of NIDIS will help move the country toward a proactive approach that will avoid conflicts and minimize the damage caused by future

droughts, thereby saving taxpayers money.

There is broad basis of support for NIDIS beyond the WGA report:

- In its May 2000 report to Congress, the National Drought Policy Commission recommended improved "collaboration among scientists and managers to enhance the effectiveness of observation networks, monitoring, prediction, information delivery, and applied research and to foster public understanding of and preparedness for drought."
- The Department of the Interior's report, *Water 2025: Preventing Crises and Conflict in the West* states, "As part of the effort to establish the National Drought Monitoring Network, Interior believes that one-stop shopping for Western water users on a single government website will aid in problem solving, particularly in critical areas. Such a site can provide information on snow pack, runoff, river operations, forecasting, and drought prediction."
- The U.S. Group on Earth Observations has drafted a strategic plan for the U.S. Integrated Earth Observation System (IEOS), the U.S. contribution to the Global Earth Observation System of Systems (GEOSS). The IEOS Strategic Plan identifies the National Integrated Drought Information System as one of six "near-term opportunities."
- In June 2005, the Subcommittee on Disaster Reduction—an element of the President's National Science and Technology Council—issued its report *Grand Challenges for Disaster Reduction.* The report finds "Compared to all natural hazards, droughts are, on average, the leading cause of economic losses." The SDR report states: "The slow onset of drought over space and time can only be identified through the continuous collection of climate and hydrologic data. To enhance decisions and minimize costs, drought warning systems must provide credible and timely drought risk information including drought monitoring and prediction products." The report includes a recommendation to "build and deploy a national instrument system capable of collecting climate and hydrologic data to ensure drought can be identified spatially and temporally, and develop an integrated modeling framework to quantify predictions of drought and drought impacts useful in decision-making."
- The President's FY '07 budget request includes $7.8 billion for NIDIS implementation and support.

Conclusion

As we approach summer, many of our western states—and much of the country—are seeing areas in drought. According to NOAA, about 26 percent of the contiguous U.S. is currently affected by moderate-to-extreme drought. Much of the Southwest had less than normal winter snowpack at the end of March, despite heavy snow during the month of March. Additionally, the January-March period was the fifth warmest ever recorded in the U.S., largely due to a record warm January.

We are already seeing the impacts of drought in 2006. According to the National Interagency Fire Center, there have been 32,988 fires between January 1 and April 24 on 2,195,768 acres. This compares to the 5-year average for this time period of 23,639 fires

on 485,308 acres.

We know from our past experiences, the costs of response efforts to drought have been staggering. The estimated cost of the 1988-1989 drought was $39 billion nationwide and was, at the time, the greatest single year hazard-related loss ever recorded. On average, the federal government spends $6-8 billion on drought response. Federal wildfire suppression costs averaged $1.16 billion per year between 2000-2005. Additionally, much time and money have gone into trying to address the water conflicts arising in many of the large river systems in the West, including the Missouri River, the Colorado River, the Rio Grande, the Klamath River Basin, and the Snake River Basin.

The Western Governors and Western States Water Council believe that improved drought monitoring and forecasting is fundamental to a proactive approach to addressing not only drought, but water shortages. The National Integrated Drought Information System authorized by H.R. 5136 will allow policy-makers and water managers at all levels of the private and public sectors to make more informed and timely decisions about water resources in order to mitigate or avoid the impacts from droughts. On behalf of the Western Governors' Association and the Western States Water Council, I would like to commend Representative Hall and Representative Udall for introducing the National Integrated Drought Information System Act of 2006. The Western States urge its enactment this Congress.